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Abstracts of Talks Presented at Meetings

FEEDING IN COCKROACHES

The environment of the cockroach was structured so that they could alter their eating when the environment changed. Three parameters of the environment were altered: temperature, water supply, and light. Two of these, temperature (35°, 30°, and 25°), and water supply, are conditions which directly effect energy usage of the animal. The third environmental parameter, light, has no direct energy usage relationship. Within the light parameter, the light-dark cycle was changed from 16:8 to constant light, and a change from a transparent to an opaque retreat greatly affected cockroach behavior.

Higher temperatures decreased meal length, but decreased meal number. Females demonstrated this increase more than did males; however, males decreased the amount they ate at low temperatures much more than did females. Patterns of feeding varied at different temperatures. Males particularly reacted more to the light-dark cycle at 35° than at 30° or at 25°. The animals showed some evidence of acclimation to higher and lower temperatures. The relationship between temperature and meal parameters (meal length, meal number, intermeal interval) were real, but less pronounced in animals maintained three weeks at the new temperature.

Light-dark cycles and nature of the provided retreat greatly effected feeding patterns. When provided an opaque retreat, cockroaches eat most frequently during scotophase. When given a transparent retreat, the animals eat a number of meals during photophase. In constant light, with an opaque retreat, both sexes ate irregularly. Meal number is greatly reduced in constant light.

To determine the effects of a limited water supply on cockroaches, they were given a specified quantity of water at various intervals from one to four days. Water was given only during photophase. It was found that female cockroaches will eat in the light, often after drinking. A few males will eat like females, but most will feed only during the dark.

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